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1 22. (New) The apparatus of claim 21 wherein the signal processor  
2 computes common mode and differential mode current and voltage  
3 components of the subscriber loop.

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1 23. (New) The apparatus of claim 21 further comprising:  
2 a linefeed driver for controlling the subscriber loop in response to the  
3 linefeed driver control signals, wherein the linefeed driver does not reside  
4 within a same integrated circuit as the signal processor.

1 24. (New) The apparatus of claim 23 wherein the linefeed driver does not  
2 compute any common mode subscriber loop voltages or currents, wherein  
3 the linefeed driver does not compute any differential mode voltages or  
4 currents of the subscriber loop.

1 25. (New) The apparatus of claim 21 wherein the signal processor is a  
2 complementary metal oxide semiconductor (CMOS) integrated circuit.

1 26. (New) The apparatus of claim 21 wherein the signal processor operates  
2 in a positive voltage range with respect to ground to generate the linefeed  
3 driver control signals for controlling a linefeed driver operating at a negative  
4 d.c. voltage offset relative to the signal processor, wherein the offset is at least  
5 approximately 40 VDC.

1 27. (New) The apparatus of claim 21 wherein the sensed tip signal includes  
2 first and second sampled tip voltages, wherein a difference between the first  
3 and second sampled tip voltages is proportional to a subscriber loop tip  
4 current, wherein the sensed ring signal includes first and second sampled

5 ring voltages, wherein a difference between the first and second sampled ring  
6 voltages is proportional to a subscriber loop ring current.

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1 28. (New) The apparatus of claim 23 wherein the linefeed driver further  
2 comprises:  
3 a tip control circuit; and  
4 a ring control circuit, wherein the tip and ring control circuits vary tip  
5 and ring node voltages of the subscriber loop in response to the linefeed  
6 driver control signals.

1 29. (New) The apparatus of claim 28 wherein the tip and ring control  
2 circuits provide d.c. isolation between the signal processor and the subscriber  
3 loop.

1 30. (New) The apparatus of claim 28 wherein the tip control circuit further  
2 comprises:  
3 a first transistor of a first type having an emitter coupled to receive a  
4 first tip control signal of the linefeed driver control signals;  
5 a second transistor of a first type having an emitter coupled to receive a  
6 second tip control signal of the linefeed control signals, wherein a base of the  
7 first and second transistors is coupled to a common signal ground node;  
8 a third transistor of a second type having a collector coupled to a  
9 collector of the first transistor and a tip line of the subscriber loop;  
10 a resistor having a first end coupled to the emitter of the third  
11 transistor to form a battery feed node, wherein a second end of the resistor  
12 coupled to a base of the third transistor and a collector of the second  
13 transistor.

1 31. (New) The apparatus of claim 30 wherein the first type is a PNP bipolar  
2 junction transistor, wherein the second type is an NPN bipolar junction  
3 transistor.

1 32. (New) The apparatus of claim 21 wherein the signal processor performs  
2 at least one of the subscriber loop supervisory functions of ring trip, ground  
3 key, and off-hook detection.

1 33. (New) The apparatus of claim 21 wherein the signal processor performs  
2 subscriber loop ring control, supervision, codec, and hybrid functions.

1 34. (New) The apparatus of claim 21 wherein the signal processor further  
2 comprises a programming interface to enable programmatic control of at least  
3 one of the following parameters: battery control, battery feed state control,  
4 voiceband data amplification, voiceband data level shifting, longitudinal  
5 balance, ringing current, ring trip detection threshold, off-hook detection  
6 threshold, and audio output signal termination impedance for voiceband  
7 communication signals superimposed on the linefeed driver control signals.

1 35. (New) The apparatus of claim 21 wherein the signal processor  
2 superimposes outgoing analog voiceband communications on the linefeed  
3 driver control signals.

1 36. (New) The apparatus of claim 21 wherein the linefeed driver control  
2 signals include separate tip control signals and ring control signals.